1. **Course Number and Course Title:**
   CMP 404 – Cloud Computing

2. **Credit and Contact Hours:**
   3-0-3

3. **Prerequisites and/or Co-Requisites:**
   Prerequisite: CMP 310 (Operating Systems)

4. **Name and Contact Information of Instructor:**
   Dr. Raafat Aburukba

5. **Course Description (Catalog Description):**
   Explores core concepts of the cloud computing paradigm, technology, and software development. Covers cloud delivery models, cloud deployment models (private, public, community, and hybrid), cloud computing architecture, virtualization, web services technologies, cloud services development and deployment, resource management, and data storage, access, partitioning and synchronization.

6. **Textbook and other Supplemental Material:**
   Notes:
   - EMC Corporation. Cloud Infrastructure and Services V2 course materials. Revision Date, 02/07/2014.

   Other supplemental material:
   - Thomas Erl, Richardo Puttini, Zaigham Mahmood. *Cloud computing: concepts, technology, & architecture.* Prentice Hall 2013, ISBN 9780133387520.
   - Richard Hill, Laurie Hirsch, Peter Lake, Siavash Moshiri. *Guide to Cloud Computing: Principles and Practice*. Springer, 2013, ISBN 978-1-4471-4602-5.

7. **Learning Outcomes:**
   Upon completion of the course, students will be able to:
   1. Describe the core components and architecture of cloud computing
   2. Categorize and analyze the cloud computing delivery and deployment models
   3. Explain pros and cons in using virtualized infrastructure, and the need of virtualization in cloud computing
   4. Discuss the importance of elasticity and resource management in cloud computing
   5. Understand the existing cloud fault tolerance techniques, security challenges and mechanisms
   6. Develop and deploy a cloud application using a cloud platform
   7. Design and configure cloud data center using state of the art tools
   8. Ability to work in a team to design, develop, and deploy cloud computing services

8. **Teaching and Learning Methodologies:**
   Traditional lectures will be used for concepts illustration and essential techniques with live demonstrations of cloud computing access and implementation. Homework assignments will be given based on the covered concepts. In addition, students will work

in small groups designing and implementing projects based on the collective concepts covered in the course.

9. Course Topics and Schedule:

Topic	Weeks
Cloud computing and its roots	1
Cloud computing delivery and deployment models	1
Cloud computing architecture and core components	1
Cloud physical resources	1
Cloud computing resource pooling and rapid elasticity through virtualization	1
Cloud infrastructure resource control	1
Cloud infrastructure service and orchestration	1
Fault tolerance in a cloud infrastructure	1
Cloud infrastructure security	1
Cloud service implementation and deployment	1
Use of a public cloud platform technology	2
Tools for building and configuring a cloud computing infrastructure	2
Review and evaluation	2
Total:	**16**